

between the three sets of postural kinematic measures (before, after the first, after the second 6MWT) for the kinematic parameters. More, we observed significant differences between the three sets for the parameters of CTM in antero-posterior (AP) direction ( $P < 0.002$ ), of determinism of RQA in medio-lateral (ML) direction ( $P < 0.0001$ ) and Entropy of RQA in ML direction ( $F = 5.93$ ;  $P < 0.004$ ).

**Discussion.**— It is satisfactory to validate that moderate-intensity walking exercise such 6MWT did not lead to fatigue which significantly affected postural responses in healthy sedentary older women. The second message is that non-linear methods appear promising methods to evidence slight deteriorations of postural adaptative capabilities.

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CO70-002-e

### The efficacy of Wii fit training vs. adapted physical activity in elderly subjects on balance: Preliminary results

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**Keywords:** Balance; Quality of life; Osteopenia; Fear of falling

**Introduction.**— Aim was to evaluate the efficacy of a training exercises performed with the Wii fit balance board (WBB) compared to traditional physical activity on motor performance, quality of life and well-being.

**Material and methods.**— Twenty female patients with osteopenia allocated in: GROUP 1- program of physical exercise with WBB and GROUP 2- adapted physical program. Rehabilitation treatment: 8 weeks, two times a week, each session lasting an hour. Scales administered: Short Form-36, Global Self-Esteem Scale of Morris Rosenberg and Psychological well being by Carol Ryff for quality of life. For Balance: Berg Balance Scale, Short Falls Efficacy Scale-International and Short Physical Performance Battery. Timepoints: before treatment, immediately after treatment and 3 months follow-up.

**Results.**— Wii group showed significantly higher scores of the Berg Balance Scale and Short Physical Performance Battery, which were not significantly different at baseline.

**Discussion.**— WBB could be considered a valid and cheap instrument to educate balance in elderly osteopenic subjects.

**Further reading**

Boon Chong Kwok, et al. Evaluation of the Frails' Fall Efficacy by Comparing Treatments (EFFECT) on reducing fall and fear of fall in moderately frail older adults: study protocol for a randomised control trial. *Trials* 2011;12:155.

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### Impact of different dual task exercises on gait quality in older people with dementia

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**Keywords:** Dual task; Gait; Dementia

**Objective.**— Dual-task situations deteriorate the quality of work and increase the risk of falls in the elderly. In very elderly people with dementia, this risk



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quality of walking for people with dementia in different situations of dual task.

**Method.**— Walking quality of 10 persons with dementia (age:  $81.4 \pm 6.1$  years, MMS:  $13 \pm 4$ ; without material assistance to walk) was assessed using the Locomotrix (tri-axial accelerometer) during a 20-m walk on simple task and dual task (count, glass of water, color, sound, talking).

**Results.**— Additional colors and counting tasks emerge as very disturbing for speed and walking cadence. Conversation task only changes the speed. These disturbances could be explained by a greater medio-lateral imbalance during these dual-task situations.

**Conclusion.**— Each situation of dual-task induces changes of the walking quality in demented elderly. However, it seems that counting situation or color choices situations are more representatives in a context of evaluation.

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### Why do osteoporotic patients fall more often?

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**Keywords:** Spinal pain; Spine mobility; Kyphosis; Osteoporosis; Risk of fall

**Introduction.**— Although being stated in the literature that osteoporotic patients are prone to fall more frequently, the knowledge of the underlying pathological mechanisms is incomplete. We thus investigated in selected patients the correlation between their risk of falling and their spinal pain, spinal mobility, and spinal column statics.

**Material and methods.**— Our study was carried out with 100 osteoporotic patients. Standardized methods were used to evaluate their mobility, gait stability and balance (e.g. Tinetti Test), their activity level (PASE) and the statics and mobility of their spine (MediMouse®). To explicitly determine potential spine-related risk factors for falling, the results observed were adjusted in linear regression statistics by considering the already known risk factors.

**Results.**— The risk of falling of osteoporotic patients is influenced by spinal pain ( $P = 0.010$ ) and the total spine mobility ( $P = 0.013$ ), in particular its rotational mobility ( $P = 0.019$ ), whereas spinal column statics, represented by the spine inclination in this context, does not show a significant effect ( $P = 0.892$ ).

**Discussion.**— Spinal pain and total spine mobility, in particular its rotational mobility, take effect on the risk of falling of osteoporotic patients. This finding should be considered in preventive patient care.

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### The "Stroop Walking Task": An innovative dual task for detecting executive function impairment

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**Keywords:** Stroop; Dual task; Gait; Mild cognitive impairment

**Introduction.**— Various types of dual task (DT) conflict paradigms are used to detect executive function cognitive impairment. There is growing evidence that suggests that these tasks would be more relevant if they mimicked everyday life situations.

**Methods.**— We consequently developed the "Stroop Walking Task," which is a DT that is similar to making a decision of whether to cross a street based on a pedestrian traffic light. Fifty-one participants (young and old participants, some of whom were cognitively impaired) had to respond to a visual signal (pictogram) with an appropriate motor response (walk or stop). We used an electronic walkway system to record the gait parameters and performed a cluster analysis.



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